UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/903,330	07/11/2001	Pradip Mitra	10919/25401	8427

29937 7590 08/20/2004

SIDLEY AUSTIN BROWN & WOOD LLP
717 NORTH HARWOOD
SUITE 3400
DALLAS, TX 75201

EXAMINER	
SEDIGHIAN, REZA	

ART UNIT	PAPER NUMBER
2633	5

DATE MAILED: 08/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/903,330	MITRA, PRADIP
	Examiner	Art Unit
	M. R. Sedighian	2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-20 and 36-50* is/are allowed.

6)☒ Claim(s) *21-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. This communication is responsive to applicant's 7/26/2004 amendments in the application of Pradip Mitra filed 7/11/2001. The amendments have been entered. Claims 1-50 are now pending.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 21-29 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goossen et al. (US Patent No: 5,949,561) in view of Spears (US Patent No: 5,455,421) and in further view of Meli et al. (US Patent No: 6,414,769).

Regarding claim 21, Goossen teaches a method for receiving (200, fig. 4) a high bandwidth multiple wavelength optical data stream (col. 1, lines 10-25 and 200, fig. 4) of plurality of different wavelength channels (col. 5, lines 7-15, 22-28), comprising the steps of: utilizing a plurality of photodetectors (col. 5, lines 15-20 and 2, fig. 4) to receive the plurality of wavelength channels (col. 5, lines 40-45), each individual one of the wavelength channels being absorbed by one of the respective photodetectors (col. 5, lines 42, 45), each individual one of the photodetectors outputting at least a portion of a respective wavelength channel based on an absorbed respective one of the wavelength channels (col. 5, lines 16-21). Goossen differs from the claimed invention in that Goosen do not disclose each one of the photodetectors comprises of a diffractive resonant optical cavity. Spears teaches a photodetector for detecting optical radiation at a predetermined wavelength (col. 2, lines 47-50), wherein the photodetector is

comprised of a diffractive resonant optical cavity (col. 2, lines 48-64). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate photodetectors with resonant optical cavity such as the one of Spears for the photodetctors of Goossen in order to provide a photodetctor structure that exhibits increased sensitivity for the incident optical radiation. The modified optical receiving system of Goossen and Spears differs from the claimed invention in that Goossen and Spears do not teach amplifying each respective generated wavelength channels. However, it is well known to amplify the electrical signal to boost the signal strength. Meli teaches an optical receiver (208, fig. 2) and an amplifier (209, fig. 2) that amplifies the signal outputted by the receiver (col. 8, lines 57-60). Therefore, it would have been obvious to an artisan at the time of invention to incorporate amplifiers such as the one of Meli in the modified opto-electrical receiving system of Goossen and Spears in order to boost and increase, or reshape the signal strength for further signal processing.

Regarding claim 22, Goossen teaches an odd integer multiple number of wavelength channels (col. 5, lines 22-28).

Regarding claim 23, Spears teaches the receiver utilize respective portions of respective wavelength channel to reduce noise (col. 1, lines 42-47, col. 2, lines 33-34).

Regarding claims 24-28, Spears teaches the diffractive resonant optical cavity comprises of semiconductor material of III-V, or AIGaAs/GaAs, or InGaAs/Inp, or multiple quantum well (col. 3, lines 2-4, col. 5, lines 21-27).

Regarding claim 29, Goossen teaches the plurality of wavelength channels comprise infrared radiation (col. 2, lines 16-25).

Regarding claim 33, Goossen teaches generating light having a plurality of wavelengths (col. 5, lines 23-25), and modulating light of each individual wavelength of the plurality of wavelengths to create the plurality of wavelength channels (col. 5, lines 8-10 and 402, 404, fig. 4).

4. Claims 30-31 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goossen et al. (US Patent No: 5,949,561) in view of Spears (US Patent No: 5,455,421) and in view of Meli et al. (US Patent No: 6,414,769) and in further view of Fry (US Patent No: 4,322,693).

Regarding claims 30-31 and 34, the modified optical receiving system of Goossen, Spears, and Meli differs from the claimed invention in that Goossen, Spears, and Meli do not disclose carbon dioxide laser corresponding to P and R transitions. Fry teaches carbon dioxide laser corresponding to P and R transitions (col. 2, lines 10-20, 44-48, col. 7, lines 59-63). Therefore, it would have been obvious to an artisan at the time of invention to incorporate a carbon dioxide laser such as the one of Fry for optical transmission sources in the modified optical receiving system of Goossen, Spears, and Meli in order to provide an efficient and reliable tunable laser that generates a plurality of wide output wavelengths.

5. Claims 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goossen et al. (US Patent No: 5,949,561) in view of Spears (US Patent No: 5,455,421) and in view of Meli et al. (US Patent No: 6,414,769) and in further view of Ferrieu (US Patent No: 6,233,380).

Regarding claims 32 and 35, the modified optical receiving system of Goossen, Spears, and Meli differs from the claimed invention in that Goossen, Spears, and Meli do not disclose a quantum cascade laser. Ferrieu teaches a quantum cascade laser (col. 2, lines 43-50). Therefore, it would have been obvious to an artisan at the time of invention to incorporate a quantum cascade laser such as the one of Ferrieu for optical transmission sources in the modified optical receiving system of Goossen, Spears, and Meli in order to provide continuous-wave and high output power light signals.

6. Claims 1-20 and 36-50 are allowed over prior art of record.

7. Applicant's arguments filed 7/26/04 have been fully considered but they are not persuasive.

Remark states Spears does not disclose or suggest the use of a diffractive resonant optical cavity. However, Spears teaches enhancing internal reflection in the cavity (col. 4, lines 22-30). Accordingly, by occurring an internal reflection within the cavity, light signals are diffracted, and the optical cavity can be considered as a diffractive resonant optical cavity. Remark further states Goossen does not teach a number of photodetectors equal to an odd integer multiple of the number of wavelength channels. Goossen teaches a signal processing of more than two channels can be suitably supported by appropriately increasing the number of optical sources and the number of photodiodes in the WDM-PD (col. 5, lines 22-28). Applicant's attention is directed that during the prosecution of a pending patent application the

terms found in the claims should be given the broadest reasonable interpretation, *See in re Pearson,* 181 USPQ 641 (CCPA 1974).

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. R. Sedighian whose telephone number is (703) 308-9063. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703) 305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M. R. SEDIGHIAN
PRIMARY EXAMINER